# Appendix A

# Cathedral Gallery

This appendix presents the full visual record of the Cathedral Complex case study, showing the region-growing clustering process, intermediate mesh results, and final reconstructed model.
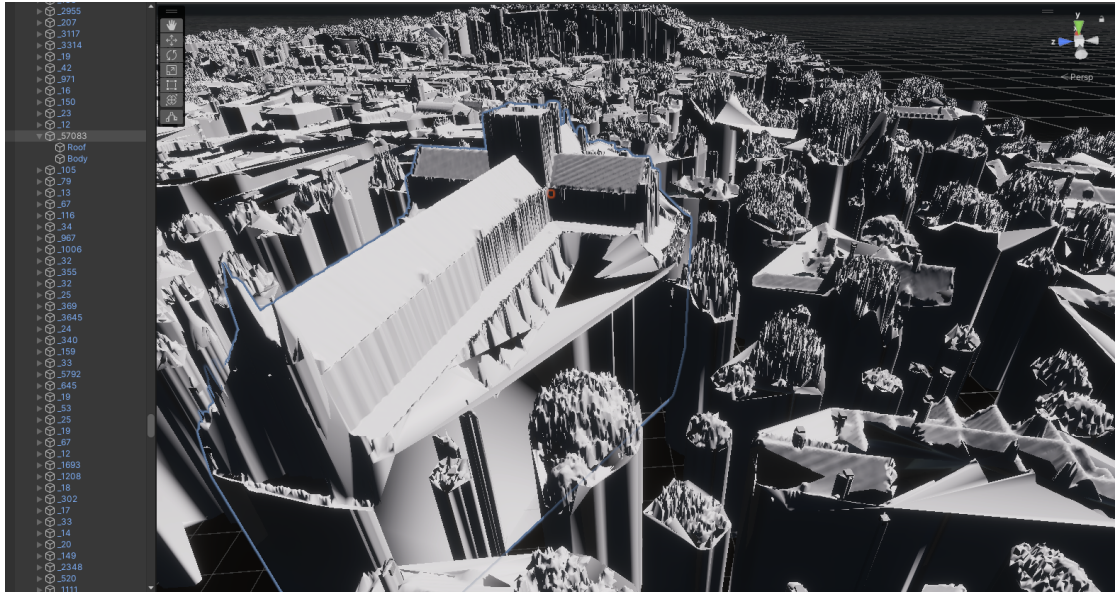


FIGURE A.1: Structural anomaly identified during large cluster list model generation.
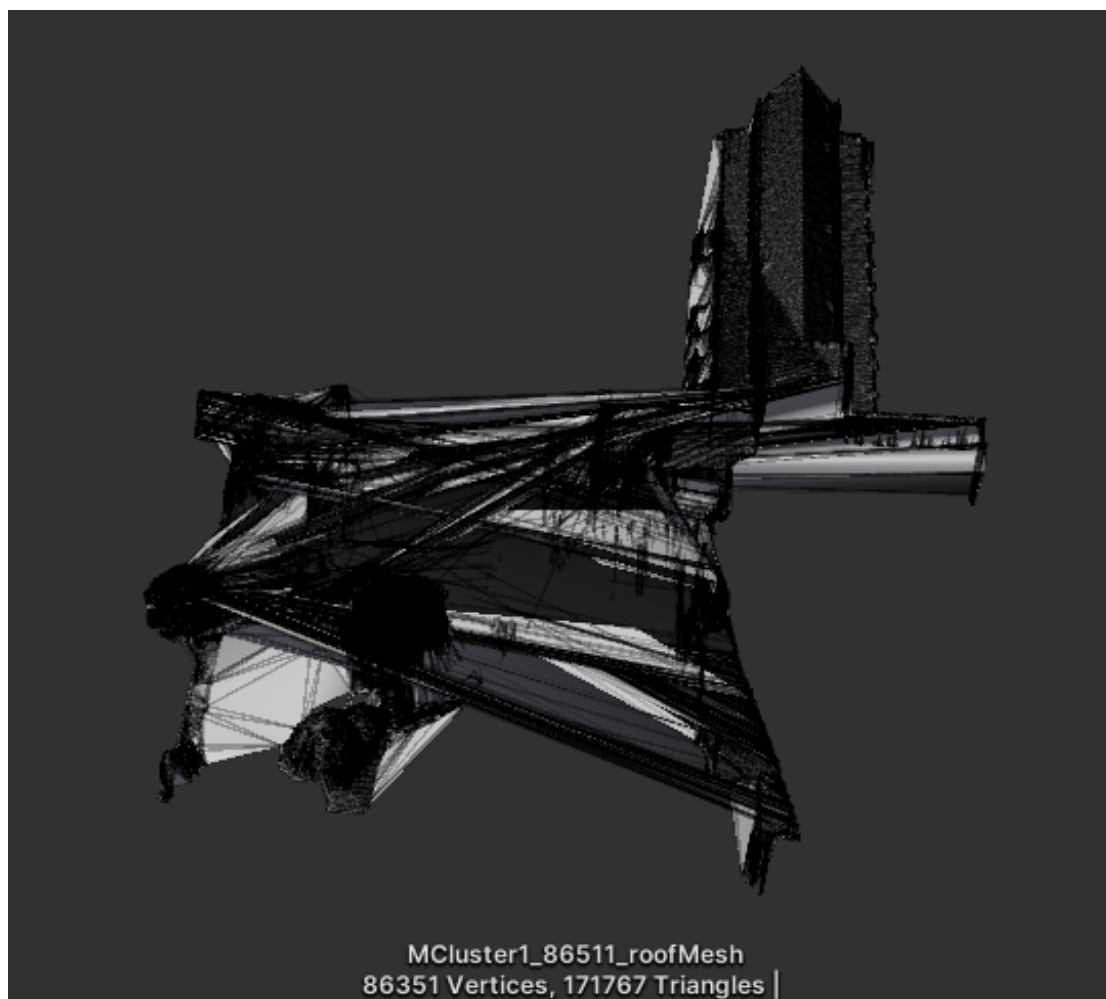
FIGURE A.2: Roof mesh of the original complex showing anomalies: spurious triangles and structural bridges.

MCluster1_86511_bodyMesh
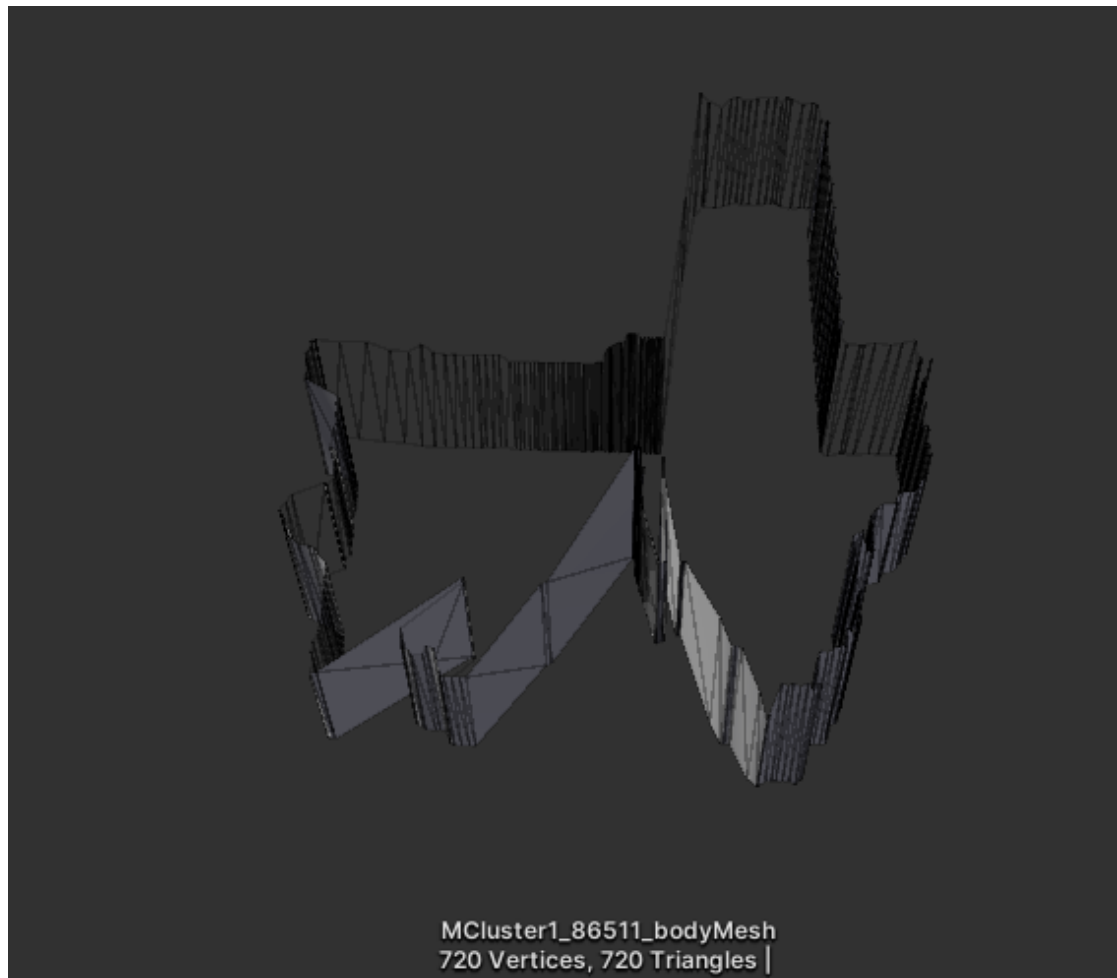720 Vertices, 720 Triangles |

FIGURE A.3: Body mesh of the same complex showing that the boundary estimation was close to correct.
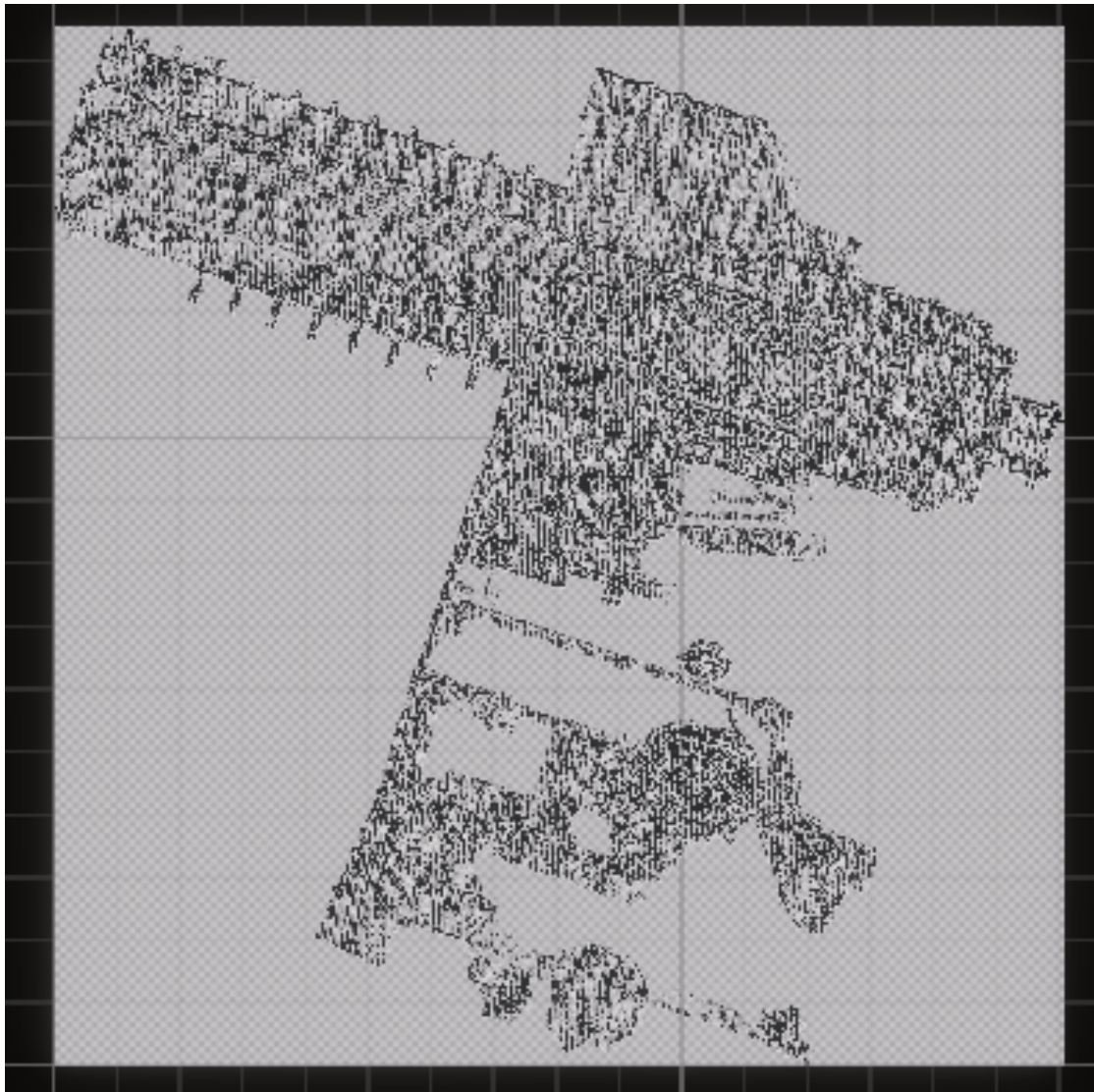
FIGURE A.4: Cathedral complex cluster extracted with a 1.0 m radius threshold (90,544 points). The created collection was used as input for the Terrain Generator. A low resolution and top-down view were used to make the cluster points easier to distinguish.

FIGURE A.5: Cathedral complex cluster extracted using an 8.0 m radius threshold. This collection was later used as input for the Terrain Generator. A low resolution and top-down view were used to make the cluster points easier to distinguish. Although subtle, some points were indeed removed — a "spot the difference" challenge.
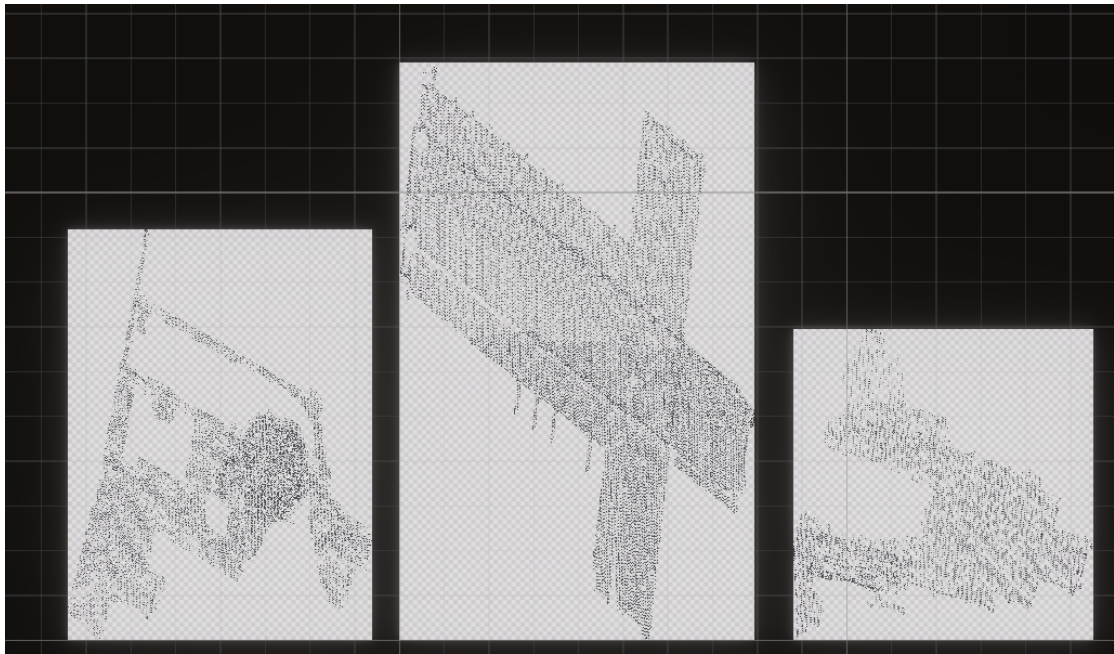
FIGURE A.6: Splitting of the cathedral complex into three subclusters after refining the clustering radius to 0.7 m.



FIGURE A.7: Roof mesh reconstructed from the side building subcluster, with anomalies eliminated.

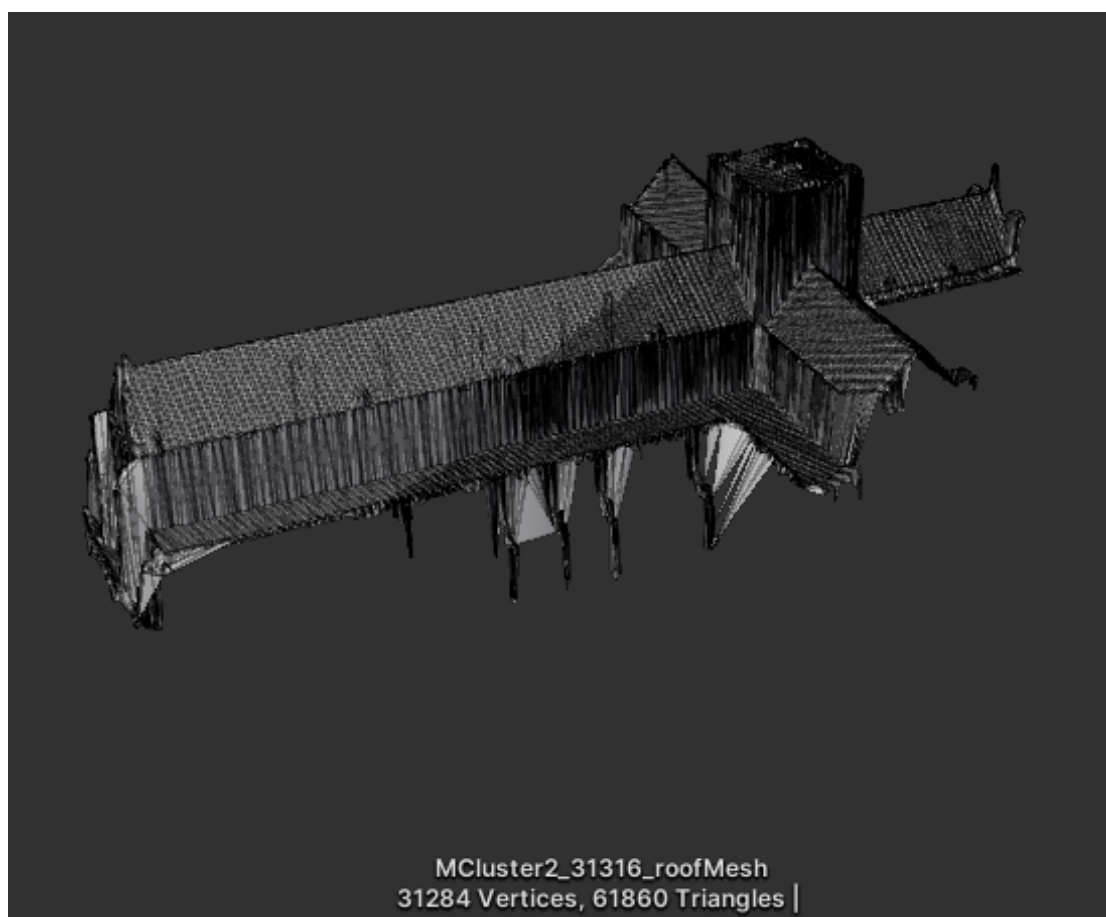MCluster2_31316_roofMesh
31284 Vertices, 61860 Triangles |

FIGURE A.8: Roof mesh reconstructed from the main nave subcluster, with anomalies eliminated.
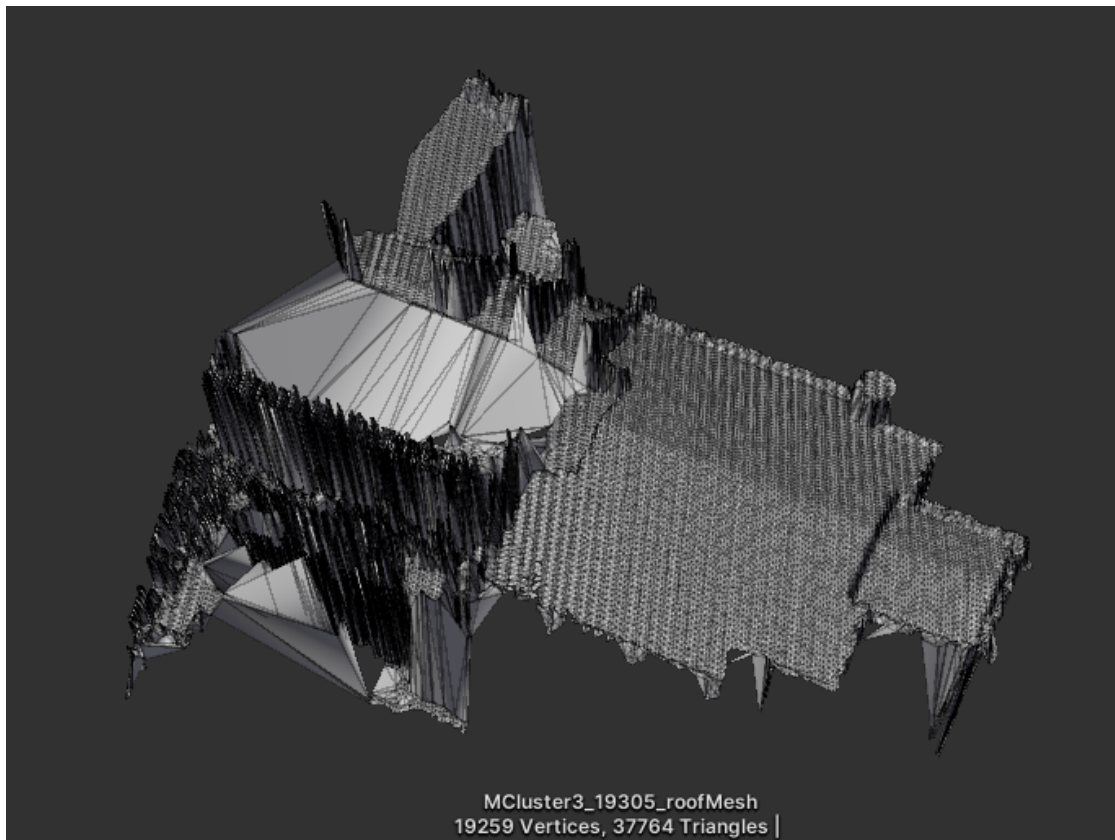
FIGURE A.9: Roof mesh reconstructed from the altar subcluster, with anomalies eliminated.
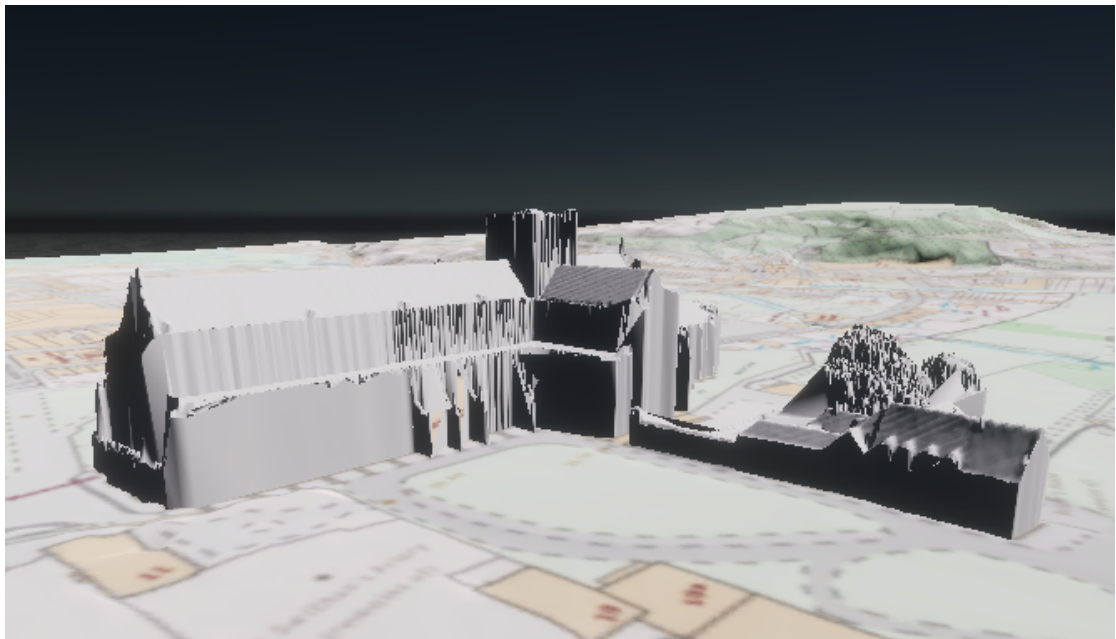


FIGURE A.10: Cathedral complex rebuilt from three subcluster models, accurately placed by the pipeline.